

# STUDY PROJECT

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## SOVIET LOGISTICS IN THE AFGHANISTAN WAR

BY

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## SOVIET LOGISTICS IN THE AFGHANISTAN WAR

### AN INDIVIDUAL STUDY PROJECT

by

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## Abstract

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On 27 December 1979, Soviet forces invaded Afghanistan. What the Soviets envisioned as a short-term operation evolved into nine years of conflict. For the Soviets, the end came with their withdrawal in 1989. Their poor performance in this low intensity conflict has received much attention recently, and offers much for study by military tacticians. However, the material available for study by logisticians is not as prolific. This paper attempts to correct this shortcoming by condensing those articles and books addressing Soviet logistics in the Afghanistan War into one document, and then presenting some conclusions about Soviet logistics doctrine and performance.

The approach taken in this paper is to present the reader with the logistics infrastructure and environment that the Soviets faced in Afghanistan, moving then to the logistics doctrine of the Soviet Army, and contrasting this stated doctrine with how logistics actually worked during the course of the conflict. The paper ends with some conclusions about Soviet logistics in light of this experience. The logistics operations of supply, transportation, and maintenance are the cornerstones of this paper.

## INTRODUCTION

On 27 December 1979, Soviet Armed Forces invaded Afghanistan. Why this global superpower entered into a military conflict in a neighboring Third World country has been the subject of many recent books and articles. Of particular interest to military experts is the impact of Soviet tactics and operational methods used there. As these topics have begun to be discussed much more openly the last three years by Soviet military experts, tacticians have gained a better picture of Soviet doctrine, personnel, and equipment proficiency. Unfortunately for logisticians, the study and impact of Soviet logistics operations during their nine year effort has not been as prolific. The purpose of this paper is to compile that which has been written about Soviet logistics in this war, and to state some "lessons learned", particularly, in transportation, maintenance, and supply operations. This will be done by contrasting Soviet doctrinal approach with the operational systems actually employed.

To understand Soviet logistic performance better, it would be helpful to review the logistic environment surrounding the initiation of Soviet intervention, addressing the key areas of terrain, transportation infrastructure, and weather of Afghanistan. This will help in understanding how and why the Soviets experienced less than satisfactory results in their logistic efforts.

## BACKGROUND

Afghanistan, about the size of Texas, is a small country as population goes - having a society of some 16 Million people. It is a predominately Muslim and agrarian country that is land-locked between the Soviet Union, Iran, Pakistan, and China.<sup>1</sup> About its only claim to fame is that it stands at one end of the Khyber Pass, much written and spoken about in the literature of the late 1800s. The terrain in the northern part is extremely mountainous; the southern and western areas are mostly desert. There are few rivers, lakes, and streams; therefore, water is a precious and scarce commodity.<sup>2</sup> As a poor country, Afghanistan is hindered in its development by the lack of any significant transportation network. One estimate places the total number of paved roads at approximately 1553 miles with a total of 10,750 miles of motorable roads in country.<sup>3</sup> Additionally, Afghanistan has no railroad system.<sup>4</sup> While a case can be stated that this is not so unusual in a poor, underdeveloped, third world country, it should be stated that some Afghanistan experts have written that this condition exists by design and not so much out of economics.

Afghanistan has consistently been pulled by outside influences, most notably the English and the Russians, throughout the last one hundred fifty years.<sup>5</sup> In an effort not to be dominated by either one, it was felt by past Afghan rulers that the lack of any effective transportation network would aid in the ability of

the country to fend off colonization, or to be used as a jumping off point by one of the two powers as they sought to establish hegemony over the southwest Asia area.<sup>6</sup> The result of this approach, however, is the failure of Afghanistan to grow and develop into any semblance of a modern state.

### LOGISTICS INFRASTRUCTURE

The major road network in Afghanistan runs from the border with the Soviet Union, near the town of Termez, to the Afghan capital of Kabul.<sup>7</sup> It is a distance of 300 miles. In traversing this road however, one has to cross the Hindu Kush region known for its large mountains and small trails.<sup>8</sup> Due to the manner in which mountains cut across the terrain, only one road through this region is possible. Additionally, at one point it is necessary to traverse a 2700 meter tunnel carved through the mountains. This tunnel is the Salang Tunnel, and it became the logistic chokepoint for Soviet forces during the war. Along this road, the Soviets developed two key logistic bases. Their largest supply depot at Pol-e-Khomri and their largest air base at Bagram. This road was a major invasion route.

A second major road is the Kabul to Jalalabad road. This continues to the border with Pakistan and represents the only major east-west road in country. The third and final major road begins in the western part of the country near the Soviet town of Kushka.

This road travels south through the major towns of Herat and Kandahar, moving north then to the capital of Kabul. This route is less mountainous, being primarily through the deserts and plains of the south-central region. It also harbored a major Soviet supply depot near Herat. This route was the other major ground invasion route.<sup>9</sup>

Of note is the fact that of these three major paved routes all but the Kandahar to Kabul section were built by the Soviets. The other section was built by the U.S.<sup>10</sup> It has been speculated that Soviet assistance in this area was for less than humanitarian reasons since all the Soviet built roads are capable of carrying tanks and heavy military vehicles. They also do not adequately integrate the Afghan economic base nor unify the country in any significant manner.<sup>11</sup>

Air transportation in the country, is limited to two primary airports, Kabul Airport built in 1962, and the military air base at Bagram (North of Kabul). Small dirt-strip airfields dot the country and are primarily adjacent to the primary road network described above.<sup>12</sup>

The weather in Afghanistan is extremely harsh. In the winter, the temperatures are frigid. Ice and snow on the roads create a significant obstacle for all traffic. This is especially true for travelers on the Termez to Kabul road. This section is considered among the world's most dangerous. Rockslides, avalanches, and heavy snowfall make it almost impassable during the winter months (November - May). The southern route, while less affected by snow,



has the problems of desert winds, extreme dust, and water shortage.

Finally, the logistic facilities of the Afghanistan Armed Forces can be characterized as small, primitive, and located primarily around Kabul. They were mostly staffed with Soviet advisors who actually handled all repairs and operations above the crew or small unit level.<sup>13</sup>

Having described the logistic environment facing Soviet forces, let's now examine the performance of the Soviet Military Logistics System.

#### SOVIET LOGISTIC DOCTRINE

Soviet military doctrine is almost totally drawn from their experiences in World War II (WW II) and their battles on the European Plain. After WWII, the Soviet military continued to plan and train for operations based on the European Theater.<sup>14</sup> All other possible conflicts were seen as short term, and so they did not require any significant logistic changes. Thus, Soviet logistic operations are set up to support the high intensity, European battlefield model where logistics is controlled at Front and Army levels to influence the battle. Below Army level, logistic operations are rigid and fixed leaving little room or chance for flexibility in application.<sup>15</sup> In a somewhat simplified form, this is how they operate.

The Soviet general principles of logistic support are: forward

delivery, forward siting, and priority driven. This means is that supplies and equipment come from the higher level of organization to the lower. From Army to Division to Regiment to Battalion. At times one level may be bypassed to expedite supplies to critical operations, but in general they flow down level by level. Incorporated with this method is the placing of both priority supply points and quick repair sites as close to the fighting elements as possible. These mobile assets are kept deliberately small since the Soviets do not stay in one place very long. The major supply and heavy repair (up to depot level) operations are kept far in the rear at fixed locations. Equipment and supplies get pushed forward as needed from these locations. The primary driver in this whole approach is a priority-based system which defines the types of logistics that get moved, issued, and resupplied regardless of competing requirements. Generally these "must have" items, in order of precedence, are: missiles (to include fuels and warheads), ammunition, petroleum (fuel and lubricants), weapons parts, rations, medical supplies, and captured equipment. All remaining requirements fall into the category of "get to it when we can".<sup>18</sup>

#### SUPPLY DOCTRINE IN AFGHANISTAN

Soviet battlefield doctrine calls for a Front Supply Base located approximately 150-200 km from the Forward Edge of the

Battle Area(FEBA). This base has branch depots. They are used to supply the Army Supply Bases located 100 km behind the FEBA. Both levels provide supplies down to lower levels by use of trucks. At the Division level, however, the total supply base is mobile. All the supplies are stored aboard vehicles. This is necessitated by the fact that this base is only 25-40 km from the FEBA. At the Regimental level, supplies are located at a mobile supply point only 10-30 km from the FEBA. The Battalions carry their supplies on organic vehicles, and those at Company level are dispersed to the platoons, sections, and crews with no reserve at company headquarters.<sup>17</sup>

This is the logistic organization the Soviets intended to follow when they entered Afghanistan. Actually, it appears they thought this would be such a quick operation that they could operate from supply points solely within the Soviet Union. This failure to consider the worst case scenario came to haunt the Soviets for the whole nine years of the war. To highlight this one needs only to review Cordesman and Wagner's The Lessons of Modern War Vol. III. What can be determined from this source is that initially the Soviets brought in about 85,000 troops, but eventually this "short war" required another 20-30,000. It is significant that this large number of troops were placed at fixed locations around the country and were not placed into a forward moving operations plan.<sup>18</sup> At first this might seem to be a benefit for them but they were not prepared to execute the logistic operations that would be necessary for sustainment.

Doctrine for the high intensity conflict of an urbanized European Theater did not translate effectively into doctrine for the low intensity, mountainous, and desert theater of Afghanistan. Supplying forces throughout the country from bases in the Soviet Union soon became inefficient and ineffective because of the constant delays caused by road conditions, equipment failures, and Mujahideen attacks. Resupply to the bases of rations, fuel, and repair parts became critical. The Army, initially, could not seem to supply the divisions with supplies in the quantities needed. It seems they failed to realize the impact of the logistic environment into which they had placed themselves.<sup>13</sup>

From Division on down, the supply system worked according to plan, but from above Division on back there were serious problems not easily overcome. It took a couple of years for the Soviets to realize that they would have to put permanent supply bases in country, and stockpile supplies such as rations, fuel, water, and repair parts in contravention of doctrine. When there is only one airport that can handle significant military transport traffic, and there is only one road network to handle ground transport, then the effort to keep 80-110,000 troops supplied can be overwhelming.

In response to this difficulty, the Soviets established the supply bases at Pol-e-Khomri and Herat. From stores at these large bases, supplies moved throughout the country to the divisions. Additionally, the Soviets took to laying pipelines along the northern route in order to keep fuel supplies for ground and air forces at sufficient levels.<sup>20</sup> POL storage farms were also located

along the two routes to minimize disruptions caused by sabotage, landslides, and routine pipeline breakdowns.

The change to doctrine that grew to be a routine operation was that of aerial resupply. Due to the terrain and sometimes inaccessibility to forward deployed units, the Soviets learned a lesson from the American Viet-Nam experience. They learned that helicopters are useful for more than just tactical and reconnaissance roles. By 1986, they were routinely using helicopters for resupply of food, water, fuel, ammunition, and medical materials - especially to company and smaller sized units. In one article, a Soviet writer details a Soviet motorized operation that ran out of fuel in a fight and could not be resupplied by road. Helicopters were used to bring fuel and other supplies to the unit.<sup>21</sup> Another article discusses the resupply of food, water, and ammo to a remote site in mountains where no road exists.<sup>22</sup>

#### TRANSPORTATION DOCTRINE IN AFGHANISTAN

In the Soviet Army, transportation at Division level and below consists of one transport battalion per division capable of transporting 1000 Tons, and with each Regiment one transport company capable of transporting 200 Tons. The only commodity these two units are concerned with is ammunition. No transport capability outside these two units exists within the tactical level command.

The majority of transport for other commodities is handled and controlled by Army level and higher organizations.<sup>23</sup> This, then, was the structure for transportation in Afghanistan. It was not long before the Soviets discovered that transportation operations would be significantly affected by forces outside their control, and that coming to grips with them and solving them would not be easy.

Soviet use and dependence on road transport systems could justifiably be called their Achilles heel in Afghanistan. As discussed earlier, Afghanistan possessed very few roads capable of handling motorized traffic. However, due to the lack of a rail system and the small capability of the country's airfields to support large cargo aircraft, almost all supplies were forced to be brought in by truck transport. The major route for this traffic was the Termez to Kabul road.<sup>24</sup>

For normal resupply, the Soviets initiated a system of convoying large numbers of trucks (100-300 per convoy).<sup>25</sup> The distance of 300 miles initially required 12-14 days to complete (round trip) and was no easy task. Medals were awarded for successfully completing each series of 20 trips. They were looked upon as a badge of honor and highly prized.<sup>26</sup> The task of supplying 110,000 troops and a significant portion of the Afghan population in this manner proved to be a severe strain on Soviet civilian and military agencies. A result of this situation was the establishment of supply depots and rest stops along the route. Not only were they needed to prevent the clogging of the road with long convoys, but

they were needed to handle maintenance breakdowns, refueling of vehicles and drivers, and to aid in security of the convoys.

Security was a major problem from the very beginning. Since the Termez to Kabul road went almost entirely through mountains, the Mujahideen, hiding in the high mountainsides, would shoot and engage the convoys with little or no return fire. Helicopter security was a risk due to the inability to maintain a position that protected the convoy and also kept them from being fired down upon by the Mujahideen. Ground security was limited to placing security forces at the front, the middle, and the trail sections of the convoy. These elements were not effective since they could not move up and down the convoy due to the narrowness of the road. As the Mujahideen became proficient at creating barriers and destroying vehicles, the Soviets were forced into daylight operations only.<sup>27</sup>

In 1982 a major disaster occurred. A Soviet convoy traveling through the Salang Tunnel suffered the loss of 800-1000 killed as the result of an explosion. Whether it was caused by a vehicle accident or Mujahideen explosives has never been clarified, but the result created a deep scar in Soviet transport operations that continued to haunt them till their withdrawal in 1988-89.<sup>28</sup>

Traffic from the other route axis, Kushka to Kabul, although less severe for driver and vehicle, encountered the same difficulties of ambushes and road mining. Along this route, convoys would stop overnight at one of the supply depots established for security and rest purposes. However, like the northern route, it

became routine for the convoy to move only during daylight and only as fast as the mine clearing unit in front of it.<sup>29</sup>

In an effort to improve this transportation nightmare, the Soviets attempted a few things. One was that they put down pipelines along the northern routes. This decreased the number of heavy, vulnerable, and target rich fuel transporters required to supply the force. A second effort initiated was in the truck and driver area. Initially light conscript trucks were used in convoys; drivers were reservists and conscripts. Both trucks and drivers proved inadequate to the task. Light trucks, a result of the European view, had to be replaced by a larger, heavy duty vehicle known as the KamAZ truck. However, it is reported that while they are more durable, they are difficult to drive and control. The reservists and conscripts experienced too many accidents. This forced a change in the training provided to new arrivals and a gradual replacement of drivers with full-time transporters from the active force.<sup>30</sup>

As these problems mounted, some Soviet experts concluded that a significant portion of the blame for this was to be laid at the feet of Soviet tactical planners. They had used Category II units (manned at 50-70% strength and with 90-100% of equipment) and Category III units (manned and equipped at 10-30% of authorization) for most of the initial operation rather than Category I units (manned and equipped at 95-110% of authorization).<sup>32</sup> It developed that these people, their equipment, and their organizational structure were overwhelmed by their mission. Some claimed that these units had poorly maintained vehicles, were forced to use



equipment pulled out of storage, and, since they were largely Asiatic, were not able to read the Russian language maintenance manuals.<sup>33</sup>

A final point on this section concerns the first recorded use of Soviet Material Support Battalions. These were developed to replace the motor transport battalion and some supply units which had primarily been the support to the line divisions of the force. As with any new organization, they experienced problems and were soon overwhelmed with requirements. Eventually over 30 of these battalions had to be deployed along with a transport brigade to support the four divisions and nine brigades in country.<sup>34</sup>

#### MAINTENANCE DOCTRINE IN AFGHANISTAN

The Soviets have basically three levels or categories of maintenance. Routine maintenance refers to the replacement, adjustment, and repair of non-major components below the division level and is time sensitive. The second level or category is Medium maintenance which involves major overhaul of up to two assemblies and can be done at regimental level or higher. The third level or category is Capital maintenance involving major overhaul to include complete disassembly and rebuild of the vehicle. This is done at Army and Front units.<sup>35</sup>

Routine maintenance at the company level authorizes only driver/crew preventive maintenance. At battalion level there is a

maintenance platoon with a shop truck and four mechanics. Regiments have a maintenance and repair company with mobile workshops that repair and evacuate equipment to backup battalions. These battalions are at division level and possess mobile repair vans, retrievers, cranes and they are responsible for the Damaged Vehicle Repair and Collection Point. Army level support comes in the form of mobile repair detachments that go forward to help regiments and divisions. Located at the Front are fixed and mobile facilities for the Capital repair mission.<sup>36</sup> The key element in this total process is time. To this end, the Soviets establish Technical Observation Points (TOP). These are located in the forward area of combat battalions for quick determination of repair and recovery needs. If it is determined at the TOP that repair can be done within five hours, the battalion repair unit does the repair. Those exceeding five hours are evacuated to the regimental repair unit where they are either repaired or evacuated further.<sup>37</sup> This then was the system to be used in Afghanistan. It seems simple, direct, and efficient, but again it is geared to a mobile, forward moving army which was not the case in Afghanistan.

As mentioned earlier, the Soviets tried to support their war at first by using a majority of Category II and III units (Reserves) in the combat support and combat service support role. By the end of 1980, they were regretting this decision. So maintenance poor were these units that they experienced breakdowns at two to three times the rate of Category I units (Active) in the European Theater. Some of this is attributed to the language

problem of the mainly Asiatic units in failing to read the Russian language manuals.<sup>38</sup> Other than basic maintenance done at the operator level, maintenance rarely got performed until the equipment broke down. Then, it was usually a major repair job to get it back into service.

Initially Soviet divisions relied on their ground maintenance battalion for their normal repair work. These units have 300 people and work with the regimental units which have 66 people. Both have adequate vehicles and tools for their mission. Below this level, maintenance is done with tool boxes and is relegated to adjustments and parts switching.<sup>39</sup> As the war progressed into years, this maintenance structure proved inadequate. The degree and frequency of equipment failure became so critical that it was necessary to place senior technical specialists into the repair company.<sup>40</sup> The object here was to eliminate the abandonment or evacuation, to repair depots, of equipment that was not significantly damaged. Vital resources in the repair parts, tools, and maintenance personnel areas were being depleted because of this ineffective system.

To correct this at the division and below level, the requirement of evacuating deadlined vehicles from the forward areas was disregarded. In its place the Soviets initiated a fix-forward concept. This change produced results in increased readiness, but it also required the Soviets to put more maintenance resources into the war since the workload in the rear did not decrease. The reason for this was the taking over of all maintenance by the Soviets for

the equipment of the Afghan Army.<sup>41</sup>

Faced with this new requirement, the Soviets proceeded to expand their repair parts system, and increased the number of repair facilities in country. However, they could not do this as easily in the area of trained mechanics. They still used a large number of conscripts, and just as they were trained they left because of the six month rotation policy.<sup>42</sup>

It should be pointed out here that the Soviets do not have a professional NCO Corps per se, and thus only officers were available to provide continuity. This was not sufficient for the maintenance effort required.<sup>43</sup> As these problems continued, more permanent repair shops and facilities were built. An example of this can be seen in the need to build two major repair facilities in Herat and Jalalabad. These were needed to ease the load on the repair facilities in Kabul which handled about 900 trucks and 300 fuel transporters per day.<sup>44</sup>

#### AIRCRAFT MAINTENANCE IN AFGHANISTAN

On the air side of maintenance, the situation was not as bad, but systems still required changes. In the Soviet military, the Aviation Engineering Service (AES) is responsible for the repair of aircraft and helicopters. During the war, the Soviets used makeshift structures and inflatable tents for repair. By 1982 it was necessary to build permanent facilities as the workload

increased and the repair shops in the Soviet Union could not provide the quick turnaround needed. The major repair site was placed at Bagram.<sup>45</sup>

However, like their ground counterpart, Soviet helicopter units found it necessary to place more emphasis on a fix-forward concept (to do sheet metal repair and welding) rather than evacuate all maintenance to the repair shops.<sup>46</sup> Soviet helicopters are not as sophisticated as western ones and so are easier to repair in the field. With rotor life shorter and overhaul being more frequent, the Soviets were able to develop a planned maintenance program that resulted in high operational rates.<sup>47</sup> This became helpful as the requirement for helicopters in logistic operations grew.

## CONCLUSIONS

In concluding this report, there are some specific observations about Soviet logistic operations that can be drawn from their experience in this war. They are:

(1) Soviet logistic doctrine is rigid, inflexible below Army level, and not geared to support a non-European/high tech war. As cited earlier, Soviet military doctrine draws its tenets from an historical analysis of Russian-Soviet conflicts of the past with the major impact being the experiences generated out of WW II. Since the advent of the Cold War, the Soviets have felt that their most likely threat was from the U. S. and western industrialized

countries of Europe. So, they have maintained a European Theater approach to their military preparation and training. As a result, logistic doctrine rigidly follows the view of supporting a multiple front, in a high tech, European environment. To the Soviets this necessitates strong logistic support from way to the rear (200 and more miles from the FEBA), where scarce resources are better protected and controlled, and where Front Commanders could use them to influence the battle. When the Soviets went into Afghanistan this doctrinal logistic approach was too rigid and failed to provide for flexibility. A high tech and expansive war in Europe would experience high attrition rates in personnel and equipment. Units would be pulled out of combat every 3-5 days. Units replacing them would be logistically full, and those removed would be refitted in the rear. This did not happen in Afghanistan where units were not involved in heavy, constant combat, and were operating out of base camps. Units needed to be constantly resupplied without going to the rear. All logistic commodities were involved here, and this was too much of a strain on a system geared to provide only specific commodities, such as ammunition, fuel, and weapons parts, in forward supply pushes. Since logistics was controlled from within the Soviet Union, logisticians at division level and below were not able to provide much flexibility to their commanders as they controlled few supplies. Only the establishment later in the war of logistic supply bases eased this burden. However, it took the introduction of some 20-30,000 more troops in order to make the system work. Even then, it was not made

efficient, seen only as a one time need.

(2) Soviet maintenance expertise is too scarce below the regimental level when placed in the non-European environment. Soviet doctrine calls for only four mechanics at battalion level and below. In Afghanistan where units operated out of dispersed base camps and garrisons, battalion headquarters and its companies were often separated from each other in the performance of their daily mission. The small number of mechanics available could not fill the need that arose from operating over a large area. The result was that vehicles were often abandoned when broken, or maintenance was neglected because the expertise to fix or provide assistance to units was not available. The Soviet fix of putting senior technical specialists into repair companies, and sending teams forward to fix equipment on a regular basis, eventually eased the situation. However, even this fix could only help in slowing down the amount of maintenance repair needed below regimental level. It was still necessary for the Soviets to establish major repair shops throughout the country in order to keep up with the maintenance requirement.

(3) Soviet language diversity creates significant obstacles to sustainment of logistics operations over time. In Afghanistan, the inability of the Asiatic Soviet forces to read and understand Russian language manuals resulted in the failure of basic maintenance and job related operations from being performed as required. This significantly affected overall logistic support, and was only overcome by the gradual introduction of Russian language

replacements. Future Soviet operations of any type will need to address this problem.

(4) Soviet Category II and III logistic units are not prepared to support tactical operations. As cited above, the Soviets did not use their first line (Category I) active forces in the combat service support role. Their decision to use Category II and III units exposed the failure of their Reserve system to properly prepare and equip these units for the mission they needed to perform in Afghanistan. Equipment was of poor quality and in insufficient numbers; equipment in storage was not in a high readiness condition and was not rugged enough to handle the environment. Reservists and conscripts had difficulty with Russian language manuals, were poorly trained in their job skills, especially the mechanics and the drivers, and were not kept in country long enough to pass on the lessons learned.

(5) The lack of any professional NCO Technical Corps severely hinders overall Soviet logistic sustainment. Perhaps the key element missing in the Soviet logistic structure is the inability to provide daily technical supervision and expertise to soldiers in the performance of their logistic duties. Soldiers who perform the duty of NCO in the Soviet Army are generally conscripts who are given a six month course in basic leading skills. This additional training, however, does not lengthen their tour of duty past the two year mark at which time most leave the service. This leaves the service with few non-officer leaders of any competency. As a result, supervision and even execution of logistic actions is



handled by officer personnel. Without their efforts, generally there is inefficiency, ineffectiveness, and misuse/abuse of resources throughout the force. Establishing a professional NCO Corps would seem to provide the solution to this situation. It would allow for better use of officer talents in the areas of management and planning, and provide continuity in the training and execution of logistic operations.

## ENDNOTES

1. Thomas T. Hammond, Red Flag Over Afghanistan, pp. 5-6.
2. Mahnaz Z. Ispahani, Roads and Rivals, p. 86.
3. Ibid., p. 127.
4. Ibid., p. 110
5. Ibid., p. 91.
6. Ibid., pp. 84, 98-99.
7. Graham H. Turbiville, Jr., "Ambush! The Road War in Afghanistan," Army, January 1988, p. 34.
8. Ispahani, p. 87.
9. Turbiville, pp. 33-34, 38.
10. Ispahani, pp. 125-127.
11. Ibid., p. 139.
12. Milan Hauner and Robert L. Canfield, Afghanistan and the Soviet Union, p. 144.
13. "Soviet Maintenance in Afghanistan (Part I)," Jane's Defence Weekly, 22 February 1986, p. 316 (hereafter referred to as "SMA - Part I").
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